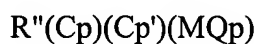


## AMENDMENTS TO THE CLAIMS

### Claims 1-16 (Cancelled)

17. (New) A method for the preparation of an olefin polymer having a ratio of internal to terminal double bonds of at least 1:1 comprising:

(a) providing a catalyst system comprising a metallocene catalyst component characterized by the formula:



wherein:

Cp comprises a substituted cyclopentadienyl group having at least one substituent on the cyclopentadienyl group which is positioned at a location distal to the bridge;

(Cp') comprises a fluorenyl group which is unsubstituted or substituted at at least one of the three and six positions of said fluorenyl group;

R'' comprises a structural bridge imparting stereo rigidity to the catalyst component;

M is a metal atom from Group IVB, VB or VIB of the periodic table; Q is a hydrocarbon group having from 1 to 20 carbon atoms or is a halogen, and P is an integer equal to the valance of M minus 2;

(b) contacting said catalyst system in a reaction zone with at least one olefin monomer which is present in a diluent in a concentration of less than 3 mol/L, under polymerization conditions at a temperature within the range of 20-90 °C effective to polymerize said olefin monomer to provide a polyolefin having a ratio of internal to terminal double bonds of at least 1:1; and

(c) recovering said polyolefin from said reaction zone.

18. (New) The method of claim 17 wherein said olefin monomer comprises ethylene or propylene wherein said olefin polymer is a polyethylene homopolymer or copolymer, or a polypropylene homopolymer or copolymer.

19. (New) The method of claim 18 wherein said olefin monomer comprises ethylene and said polymer is an ethylene homopolymer or an ethylene copolymer.

20. (New) The method of claim 19 wherein said ethylene monomer is contacted with said catalyst system along with a comonomer of butene or hexene to produce an ethylene copolymer.

21. (New) The method of claim 18 wherein said monomer comprises propylene and said polymer is a polypropylene homopolymer.

22. (New) The method of claim 17 wherein said fluorenyl group Cp' is substituted with at least one substituent in at least one of the 3 and 6 positions and said cyclopentadienyl group Cp is substituted with a substituent which is bulkier than the substituent on the fluorenyl group.

23. (New) The method of claim 17 wherein said cyclopentadienyl group Cp is substituted at the distal position with a substituent selected from the group consisting of n-Pr, i-Pr, n-Bu, t-Bu and Me<sub>3</sub>Si.

24. (New) The method of claim 23 wherein said fluorenyl group Cp' is unsubstituted.

25. (New) The method of claim 23 wherein said fluorenyl group Cp' is symmetrically substituted with a substituent which is less bulky than the distal substituent of the cyclopentadienyl group Cp.

26. (New) The method of claim 25 wherein said fluorenyl group Cp' is substituted at the 3 and 6 positions.

27. (New) The method of claim 17 wherein said R" is selected from the group consisting of an isopropylidene group, a diphenyl methylene group, an ethylene group, and a dimethyl silyl group.

28. (New) The method of claim 27 wherein said metallocene catalyst component comprises an isopropylidene (3t-BuCp) (fluorenyl) ligand structure.

29. (New) The method of claim 17 wherein said polymerization is carried out to provide a polyolefin having a ratio of internal to terminal double bonds of at least 2:1.

30. (New) The method of claim 17 further comprising reacting said polyolefin produced in subparagraph (b) to produce a nonlinear polyolefin.

31. (New) The method of claim 30 wherein said nonlinear polyolefin is a cross-linked polyolefin.

32. (New) The method of claim 30 wherein said nonlinear polyolefin exhibits long chain branching.

33. (New) The method of claim 17 wherein the polyolefin recovered from said reaction zone in subparagraph (c) is transferred to a second reaction zone in series with said first

reaction zone and further comprising reacting the said polyolefin in said second reaction zone to produce a nonlinear polyolefin.

34. (New) The method of claim 33 further comprising functionalizing said polyolefin in said second reaction zone by the reaction of said polyolefin with a functionalizing agent in said second reaction zone.

35. (New) The method of claim 34 wherein said functionalizing agent introduces polar groups at internal double bonds of said polymer.

36. (New) The method of claim 35 wherein said polar groups are selected from the group consisting of carboxylic acid groups, acrylic groups, acrylate groups and carboxylic acid ester groups.